

What is claimed is:

1           1. A lithographic process for fabricating an article comprising:  
2           introducing an image of a pattern into a layer of energy sensitive material formed over a  
3 substrate;  
4           developing the image to form the first pattern having features of a first size in the energy  
5 sensitive material;  
6           reducing the size of at least a portion of the developed features having the first size by  
7 exposing the features having the first size to a liquid isotropic etchant to form features having a  
8 second size; and  
9           transferring the pattern with the features having a second size into the underlying  
10 substrate.

1           2. The process of claim 1 wherein the image is introduced into the energy sensitive resist  
2 material by directing radiation onto a lithographic pattern mask thereby projecting an image of  
3 the mask pattern into the energy sensitive resist material.

1           3. The process of claim 1 wherein the image is introduced into the energy sensitive resist  
2 material by directly writing the pattern using a beam of radiation.

1           4. The process of claim 1 wherein the energy sensitive material is formed on an anti-  
2 reflection coating layer formed over a substrate.

1           5. The process of claim 4 wherein the anti-reflection coating is an inorganic anti-  
2 reflection coating.

1           6. The process of claim 5 wherein the anti-reflection coating is an inorganic dielectric material  
2 comprising silicon, oxygen and nitrogen.

1           7. The process of claim 5 wherein the anti-reflection coating is formed over the substrate  
2 by chemical vapor deposition.

1           8. The process of claim 1 wherein the layer of energy sensitive resist material is formed  
2 on a layer of polycrystalline silicon formed over the substrate.

1           9. The process of claim 2 wherein the wavelength of the radiation directed onto the mask  
2 is selected from x-ray radiation, extreme ultraviolet radiation, 157 nm radiation, 193 nm  
3 radiation, deep ultraviolet radiation, I-line radiation and particle beam radiation.

1           10. The process of claim 9 wherein the particle beam radiation is selected from the group  
2 consisting of ion beam radiation and electron beam radiation.

1           11. The process of claim 1 wherein the article is a semiconductor device.

1           12. The process of claim 1 wherein the article is an optical device.

1           13. The process of claim 1 wherein the article is a lithographic mask.

1           14. The process of claim 1 wherein the substrate is a semiconductor substrate on which  
2 is formed a layer of oxidized silicon.

1           15. The process of claim 1 wherein the energy sensitive resist material is a positive  
2 energy sensitive resist material.

1           16. The process of claim 1 further comprising baking the developed pattern before the  
2 reducing step.

1           17. The process of claim 16 wherein the developed pattern is baked at a temperature that  
2 is below the glass transition temperature of the energy sensitive material.

1           18. The process of claim 5 wherein the anti-reflection coating is a hardmask coating.

1           19. The process of claim 1 wherein the energy sensitive material is formed on a hard  
2 mask coating formed over a substrate.